

R E M A R K S

The Examiner is respectfully requested to return a copy of the Form PTO/SB/08A mailed on September 9, 2005, and to indicate thereon that the cited publications were considered and made of record.

In reply to the second paragraph on page 2 of the Office Action, page 6, line 25 of the specification was amended to read as follows: --BRIEF DESCRIPTION OF THE DRAWING--.

Also, page 57 of the specification was amended to replace "FIG. 1" with --the Figure--, since there is only one drawing figure which is labeled as "FIGURE."

Claims 1, 3 and 13 were amended to reply to the 35 USC 112, second paragraph rejection, which is discussed hereinbelow.

The amendments to claim 1, claim 12 and claim 13 regarding the content of acrylamide contained in the food are supported in the specification on page 20, lines 14 to 19, and in the Examples (page 20, line 20 to page 57, line 9).

Claims 2, 4, 5, 7 and 9 were amended to make minor editorial revisions.

The amendments to claim 9 regarding the terminology of "worked under the conditions of a temperature and a period of time..." are supported in the specification on page 19, lines 15 to 21.

Amendments were made to claims 1, 3, 9 and 10 to delete the terminology of "peptide complex."

It is noted that claim 10 is directed to semi-cooked food which is finally cooked (see the paragraph bridging pages 15 and 16 of the specification).

New claim 15 is supported by original claim 1 and recites the feature of a "peptide" which was deleted from claim 1.

New claim 16 is supported in the specification in Table 1 on page 37 and Table 9 on page 58 of the specification.

New claim 17 is supported in the specification on page 20, lines 14 to 19.

New claims 18 and 19 recite features of claim 15.

New claims 20 to 23 recite features of claim 1.

The Rejection Under 35 USC 112, Second Paragraph

Claims 1, 3 and 13 were rejected under 35 USC 112, second paragraph for the reasons set forth on page 2, lines 6 to 15 of the Office Action.

Claims 1, 3 and 13 were amended to avoid the 35 USC 112, second paragraph rejection.

Regarding the terminology of L-arginine L-glutamate and L-lysine L-glutamate, which is recited in claim 3, it is noted that L-arginine L-glutamate and L-lysine L-glutamate are conventionally known food additives in the technical field of the present invention. L-arginine L-glutamate is a salt formed by bonding an amino group of L-arginine and a carboxyl group of L-glutamic acid together by an ionic bond. Similarly, L-lysine L-glutamate is a salt formed by bonding an amino group of L-lysine and a carboxyl group of L-glutamic acid together by an ionic bond.

In view of the above, withdrawal of the 35 USC 112, second paragraph rejection is respectfully requested.

The Presently Claimed Invention

The presently claimed invention relates to a method of preparing a food having a decreased content of acrylamide, by adding a specific compound to the food. In the presently claimed invention, the compound is, as recited in claim 1, (a1) a neutral amino acid, (a2) a basic amino acid, (a3) a neutral imino acid, or (b) a sulfonic acid. Further, as recited in new claim 15, the compound is a peptide.

The Prior Art Rejections

Claims 1, 2, 4, 7, 9, 10, 12 and 13 were rejected under 35 USC 102 as being anticipated by USP 6,436,458 to Kuechle et al. for the reasons set forth on page 3 of the Office Action.

Claims 3, 5, 6, 8 and 11 were rejected under 35 USC 103 is being unpatentable over Kuechle et al. for the reasons set forth on page 4 of the Office Action.

It was admitted in the Office Action that Kuechle et al. do not disclose heating that is not lower than 120°C; frying, stir-frying or roasting; the salt of claim 3; some of the food products of claim 8; and preparing cooked food.

Kuechle et al.

Kuechle et al. disclose a dough to be cooked under heat, and further describes that the dough includes a protein supplement.

Kuechle et al. describe a protein supplement, namely "a suitable protein supplement can include proteins resulting from amino acids such as ..." (see column 4, lines 49 to 58 of Kuechle et al.). Kuechle et al. discuss that the protein supplement provides "structure to the dough," and that the protein supplement provides "a crisp, brown outer surface as well as a tender interior that is moist but not doughy" (see column 4, lines 44 to 48 of Kuechle et al.).

Differences Between the Presently
Claimed Invention and Kuechle et al.

In Kuechle et al., the protein supplement means "a protein resulting from twenty (20) types of amino acids. The 20 types of amino acids listed therein indicate merely components of the protein. Thus, the protein supplement of Kuechle et al. is a protein (which is a polymer formed from a great number of amino acids bonded together), and not a single molecule of an amino acid.

Working Example 1 of Kuechle et al. describes that the dough contains albumin and caseinate (both of which are proteins) (see

Table 2 at the bottom of column 13 of Kuechle et al.). However, Kuechle et al. make no mention that the dough contains a single molecule of an amino acid, such as an imino acid, a sulfonic acid or a peptide molecule (i.e., the additives of the presently claimed invention). Therefore, Kuechle et al. do not disclose that their dough contains any of the additives of the presently claimed invention.

In view of the above, it is respectfully submitted that the present claims are novel.

The Rejection Under 35 USC 103

(1) Applicants' contribution to the Field of the Invention

The present inventors made a great contribution to the field of the invention. At the time the present application was filed, it was known that acrylamide is contained in a livestock feed cooked under heat, but a method of decreasing the acrylamide content thereof was not known (see the present specification on page 2, lines 6 to 9). Also, for other kinds of food, at the time of the present invention, there was no method of effectively decreasing the acrylamide content.

In view of such a technical background, the present inventors discovered that acrylamide in a food can be effectively decreased by adding a specific additive to the food (see the present specification on page 2, line 22 to page 3, line 9). The present invention was achieved based on this discovery. Thus, it is respectfully submitted that the present invention is an epoch-making new technology in the respect that for the first time, the amount of acrylamide in a food product can be reduced.

(2) Non-Obviousness of the Presently Claimed Invention

(i) As described above, the present invention has been achieved based on the discovery that the content of acrylamide in a food can be effectively reduced by adding any one of the additives of the presently claimed invention to food.

As described above, Kuechle et al. do not disclose or suggest that their dough contains any of the additives of the presently claimed invention.

Therefore, it is respectfully submitted that based on the disclosure in Kuechle et al., a person of ordinary skill in the art would not arrive at the presently claimed invention, i.e.,

using an additive to decrease the acrylamide content in food. Further, it is respectfully submitted that a person of ordinary skill in the art would not be able to predict from the disclosure of Kuechle et al. the advantageous results of the presently claimed invention, namely that the content of acrylamide can be decreased with the use of specific additives.

(ii) Additionally, as is well known in the technical field of biochemistry, a protein, unlike a single molecule of an amino acid or a peptide, exhibits its activity only if the protein forms a steric structure called the higher-order structure. Thus, it is clear from the technical common knowledge that a protein does not exhibit the same activity as a single molecule of an amino acid or a peptide that is a part of the structure of a protein.

In the presently claimed invention, a single molecule of an amino acid or a peptide has the advantage of decreasing the content of acrylamide in a food, whereas a protein does not decrease the acrylamide content in a food. As evidence that a protein does not decrease the content of acrylamide in a food, submitted concomitantly herewith is a DECLARATION UNDER 37 CFR

1.132 of Tomo TAKAYAMA dated November 7, 2005.

Thus, it is respectfully submitted that based on the disclosure of a protein in Kuechle et al., one of ordinary skill in the art would not conceive of the presently claimed invention, namely the use of a molecule of an amino acid or a peptide to decrease the acrylamide content of food.

(iii) The important features of some of applicants' specific claims are discussed as follows:

Claim 14

When

glycine (Examples 1, 13, 15, 18 and 32 of the present specification);

taurine (Examples 5, 12, 17, 26 and 43, and the Model Test on page 58 of the present specification);

β -alanine (Example 6, and the Model Test on page 59 of the present specification);

γ -aminobutyric acid (Example 7, and Model Test on page 59 of the present specification);

L-lysine hydrochloride (Examples 21 and 38, and Model Test
on page 58 of the present specification);
L-hystidine (Example 23 of the present specification);
L-proline (Example 24 of the present specification);
L-lysine L-glutamate (Example 28, and Model Test on page 58
of the present specification);
L-cysteine hydrochloride (Examples 32 and 37, and Model Test
on page 58 of the present specification); or
ornithine hydrochloride (Model Test on page 59 of the
present specification)

is used as the additive, the content of acrylamide is
significantly decreased particularly (to less than 50% of the
case compared to the comparative examples), as described in the
respective examples of the specification specified above.

Claim 16

When

polylysine (Example 29 of the present specification); or
glutathione (Model Test on page 58 of the present
specification)

is used as the peptide, the content of acrylamide is significantly decreased (to less than 50% compared to the case of the comparative examples), as described in the respective examples specified above.

Claims 18 and 19

New claims 18 and 19 are each directed to a method for decreasing the acrylamide content in food. Kuechle et al. do not teach or suggest decreasing the content of acrylamide contained in a food.

In view of the above, withdrawal of each of the prior art rejections under 35 USC 102 and 35 USC 103 is respectfully requested.

Jaeggi et al.

USP 4,218,487 to Jaeggi et al. was referred to in the Office Action on page 5, lines 2 to 3. Jaeggi et al. is substantially different from the presently claimed invention in that Jaeggi et al. disclose flavoring compositions containing an amino acid used in food products. In addition, Jaeggi et al. make no mention of

decreasing the content of acrylamide contained in a food.

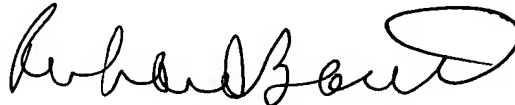
Reconsideration is requested. Allowance is solicited.

Enclosed is a check for \$350 in payment of an additional independent claim and three additional total claims.

If the Examiner has any comments, questions, objections or recommendations, the Examiner is invited to telephone the undersigned at the telephone number given below for prompt action.

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Respectfully submitted,



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Encs.: (1) DECLARATION UNDER 37 CFR 1.132 of Tomo TAKAYAMA
dated November 7, 2005

(2) Check for \$350